

Mohave County Miner.

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Mining Marvel on Exhibition.

A machine that will bore its way through hard rock at the rate of 25 to 250 feet per day, and leave a hole eight feet in diameter, a machine that is operated by one man and that reduces the cost of driving mining tunnels 50 to 75 per cent, is the claim made by the patentee of a tunneling machine that is now on exhibition in Boise City, Idaho.

The machine is the invention of a Denver man, Mr. Sigafos. It consists of a pair of cast circular rings, slightly smaller than the diameter of the tunnel to be driven. Through these there is a central water pipe, and places for twelve boring shafts, fronted with blunt, chisel-faced bits. At the rear is a planetary gearing, which provides for a slow rotation of the whole machine, also for the rapid rotation, 200 revolutions per minute, of a central shaft that carries a double cam to engage bosses on the drill or plunger shafts. These drill shafts are mounted at intervals around the main axis, so that the one cam operates eight of them on the outer circumference. A small cam on the same main shaft operates four drill shafts that are to cut out the inside of the rock core. The drill heads are more than a foot in diameter, and not the small bore machines that are used in ordinary drilling. They have a number of blunt chisel-faces, which are not to drill, but to pulverize the rock. The drill shafts and heads weigh 1,600 pounds each, and have a stroke of one foot. They are drawn back by the cam and driven against the rock by powerful springs, which strike a 4,000-pound blow.

A stream of water is continually played against the face of the drift, by a spray nozzle, and the water suffices to carry away all the muck. The broken rock comes out more like powder than anything else, for it is not the idea of the inventor to try to rend the rock in chunks, but to pulverize it like the constant hammering of a stamp mill. Indeed, the principle of the machine is exactly that of a stamp mill, save that the stamp shafts are horizontal instead of vertical, are arranged in a circle instead of straight rows, and are actuated by springs instead of gravity. The weight per stamp is approximately the same as a gravity stamp of the heaviest kind, 1,600 pounds.

The whole machine crawls along in its own tunnel, like a mole, revolving and cutting its way as fast as the nature of the rock will permit. The weight is carried on sets of wheels, pivoted on a universal axis, which by inclining one way can be made to force the machine forward, or by reversing will drive it back out of the tunnel. The hinder framing ring is smaller than the front one, and by decreasing the diameter of the circle, as described by the wheels mounted at the rear end, which can be done by a screw mechanism, the machine can be made to cut upward to any desired slope, for drainage. By applying screw jacks to the rear end the machine can be made to cut and turn to a right angle within forty-six feet.

An eight-foot machine weighs 41,000 pounds; one for railroad use, cutting an eighteen-foot tunnel and carrying thirty-three cutters, weighs about 100 tons. A twelve-foot machine is also to be made for street car tunneling.

While the machine is new on the market it has been tested enough to prove that the inventor's claims are good, and that the giant mole may be the greatest invention the rock miner has ever dreamed of.

Famous Turquoise Mine in the Burros.

The publicity given to the Meerschaum deposits in Grant county, especially in eastern dailies, has attracted general attention to the rich and diversified mineral belt of southwestern New Mexico. Grant county has the largest alum deposit in the county, at Fierro is located an iron deposit unrivaled in quality of ore produced even by the famous Mesabi field of Minnesota, in the Burro mountains there is a copper district. pronounced by such mining men as Thomas F. Cole, H. B. Hoveland and others as the equal of

any camp in Arizona. The first copper mined in the territory of the United States was mined at Santa Rita, Grant county. As silver producers such camps as Chloride Flats near Silver City, and Georgetown are known throughout the mining world. Located in the Burro mountains is the largest turquoise mine in the world. Antiquarians claim that the Aztecs secured their most valuable gems from this mine, which was located on the old trail running from Santa Fe to Mexico City. An article in the Kansas City Star recently described the deposit as follows:

In the order of their modern discovery the locality of the New Mexico turquoise mines is as follows: Los Cerillos, Santa Fe county; Burro Mountains, Grant county; Hachita, Grant county, and the Jarilla mountains in Otero county. The mines which have produced the finest gems are in Burro mountains near Silver City, where the largest turquoise mines in the world, the Azure mine, is located.

The entrance into the Azure mine is a tremendous cut, 1,000 feet long, 60 feet across the bottom, 150 across the top and 75 feet deep.

Turquoise mines are not worked with precision or rule, as the precious stone is variable in its occurrence. Sometimes one blast of dynamite will open a pocket of valuable stone. And again 100 feet or more will be worked without discovering one bit of stone of commercial value. Turquoise of the finest color and hardness is more rare than the diamond of the same grade. In the whole city of New York probably not 20 pieces of perfect turquoise could be found. It is not on the market. Small pieces may be hoarded by the dealers, but on the whole the deep azure blue turquoise is not often seen, because it cannot be found. It has been 12 or more years since the famous Elizabeth pocket was found in the Azure mine. The turquoise found in this pocket occurred near the surface and was of a blue equaling any ever found in Persia and finer than any ever found in America. It was sold at 20\$ a carat wholesale. It is estimated that the Azure company sold the Elizabeth turquoise for no less than 5,000,000\$. It would have broken the market to produce this quantity of flawless gems at one time and without doubt the stone was carefully hoarded by the dealers in New York and gradually put upon the market. Little of this grade of turquoise can be bought at this time. The company retains a few pieces for show purposes but it openly admits that not since that time has turquoise of such high grade been discovered in its mine.

Two Million Tons in Sight.

Phoenix, British Columbia, March 30.—Acting manager Beardsley of the British Columbia Copper Company has at last been able to get the second furnace in blast at the newly completed smelting works of the company in Greenwood, and it is hoped that there will be no further delays and that the works will have a steady run from now on with at least two furnaces. A third furnace will be blown in when conditions warrant it.

All three of the boundary smelters have been hard hit this winter on account of the shortage of fuel and cars, together with the unusually severe weather that prevailed for several weeks. As the British Columbia Copper Company had not been smelting since last summer, when the dismantling of the old and smaller blast furnaces was begun, the vexatious delays encountered proved to be rather expensive for the company. It has been estimated that had the new machinery, etc., been delivered when promised, and had the other delays not occurred the company would have made at least 300,000\$ net profits since last September more than it did earn, when the present price of copper is taken into consideration. This will give some idea of what the numerous delays meant from a financial standpoint.

Recently on account of bad roads there has been trouble in getting all the sulphur ore needed, but now that it is beginning to come in freely, there is every prospect of being able to keep

the two furnaces in blast steadily. The furnaces are now handling upward of 1,200 tons of ore daily, which is estimated to mean a net profit of something like 100,000\$ per month.

Cogate Hoyt, president of the company, recently had the Mother Lode mine examined by an expert, who reported that there are approximately 2,000,000 tons of ore in sight in that mine alone. The average yield of this ore is given 1.23 per cent copper, .05 ounce gold and .23 ounce silver, giving a gross value of 7\$ per ton on 20-cent copper. It was also estimated that the ore could be mined, smelted and all other expenses paid for 3.97\$ per ton, resulting in a net profit of approximately 3\$ per ton.

Recently the company made arrangements with the Dominion Copper Company to work that company's Morrison mine, a mile and a half from the railway, in Deadwood camp, and ore is now coming down from that property, as well as the Mother Lode, Napoleon, Emma and British Columbia mines, all of which latter are owned outright by the company. These mines have all been fully equipped with machinery and are prepared for a large and steady output to the British Columbia Copper Company's smelter.

Strike Gold Near Tombstone.

Tombstone may become the scene of a gold excitement of pretensions if developments of a gold strike just made by James Hamilton, west of town, continues to improve. Mr. Hamilton is the locator of a group of claims about two miles from the city, in the big granite belt that is found in such bold and prominent outcrop skirting along the western boundary of the Tombstone mining district. A shaft sunk on a lead has given him much encouragement, and yesterday at a depth of 55 ft. he states that he encountered some small pockets of rich gold ore, samples of which are literally sprinkled with the yellow metal and would assay into the thousands. Several samples seen about town caused much comment, and many claims in the vicinity of the strike have been located. Mr. Hamilton proposes pushing his explorations, and if further rich finds of this character are encountered this vicinity will be the scene of a gold mining excitement that will attract attention from all over the country and add to the fame of the Tombstone district. The granite hills in the vicinity of this find was the first camping place of Ed Schieffelin, when he discovered the Tombstone mines, and is reported to have expressed his belief that gold would be found thereabouts. The Hamilton strike may open a new field for profitable gold mining, and development will be watched with interest.—Tombstone Prospector.

150,000\$ Mining Deal.

A Prescott dispatch says: Perfecting a 150,000\$ mining deal in the short space of ten days is a feat seldom heard of in the mining states or territories of the west, but such was the record made here by William Nellis of Mayer, who promoted the sale of the Copper Queen group of mines, owned by Scholey brothers, Comer brothers and J. C. Hartsfield, the title of which passed into the possession of Burr Douglas and his associates, of Kansas City, Mo. According to the terms of the transfer 15,000\$ was paid down on the purchase price when the title passed, the remainder to be paid within six months from yesterday.

The deal is the fourth and the most important of a series of transfers made of mining properties in the Copper Creek district in the past two years by Nellis, who still retains interests in the district as promising, it is said, as any that he has disposed of so far. It was through his influence and standing in the mining world that the Rosalie group of nine claims was purchased by the Rosalie Copper company, for the sum of 75,000\$, the Brooklyn-Arizona group of six claims purchased by the Brooklyn-Arizona mining company, and the Sunset group of fifteen claims taken over by the Sunset Copper company, all in the immediate vicinity of the Copper Queen group, dis-

posed of yesterday, and upon all of which active development is being vigorously prosecuted.

Finds a Way of Making Copper.

A special to the New York Times from Baltimore says: The Sun says that according to advices received at the John Hopkins university from England, the world's source of copper production is to be radically changed within the next few years. At a meeting of the chemical seminary at the university last week it was secretly announced to the members of the department that President Ira Ramsen had just received a private communication from the distinguished English chemist, Sir Wm. Ramsey, of Cambridge university, that he had succeeded in accomplishing what no other chemist has been able to do—the segregation of one element from another and the production of copper by the synthetic or combination process from the elements of sodium, lithium and potassium. A combination of these elements, when treated with radium vapor, gives us a product copper sulphate, which is readily broken down into copper. Such is the substance of his experiments.

Sir William Ramsey has not yet announced his discovery to the public, but will give a full account of it in a paper which he will read before a meeting of the Royal Chemical Society of Great Britain, which will meet in London soon.

George C. Kaufman of New York, representative of the Guzzenshims, who recently acquired the Tip Top property in the Helvetia district, is in Tucson. He is not particular as to the number who apply for work at the

Tip Top. His company could use 150 men if they were to be had. Mr. Kaufman had a conference with a Helvetia Copper Company representative and there was a report that the mining companies in the Helvetia district would combine to build a railroad, which will give them better shipping facilities and thereby lessen the cost of freighting. When asked if there is any likelihood of a railroad being built from Helvetia to either the Southern Pacific or the Twin Buttes, Mr. Kaufman stated that this was a matter for the Helvetia people to decide. The Tip Top mine is continuing its ore shipments to the El Paso smelter. Three tunnels are being run on the Omega property and about thirty miners are employed in development work.—Journal.

Sees the Newspaper.

A delegation of Pima chiefs, representing four villages, called at the Blade sanctum Wednesday to make complaint against the agent at Sacton for cutting their dams and turning their water down to the agency farm. The chief of the Blackwater village stated that his people had maintained the Blackwater dam continuously for forty years and he cannot understand how the government could rightfully cut that dam and turn their water down to the agency farm and the other chiefs of the party took the same view of their dams, claiming that they had prior right to the water by years of prior use thereof. As near as we could gather, the 15,000\$ pumping plant by which the agency farm is irrigated, broke down and the farm had to be irrigated from the river.—Flourance Tribune.



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